Status of E-906/SeaQuest

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The SeaQuest status

- **(so far) unpolarized fixed-target DrelI-Yan experiment**:
  - a 120 GeV proton beam extracted from the MI and
  - a moving target table (liquid H and D, solid state nuclei)
- **significant increase in physics reach:**
  - unique access to sea quarks at high-x
  - What is the structure of the nucleon?
  - What is the structure of nucleonic matter?
- **commissioning run 03/07/2012 – 04/30/2013**
- **waiting for beam ~ end of October 2013**

Beam-line problems: 04/11 – 10/13 (tbc)

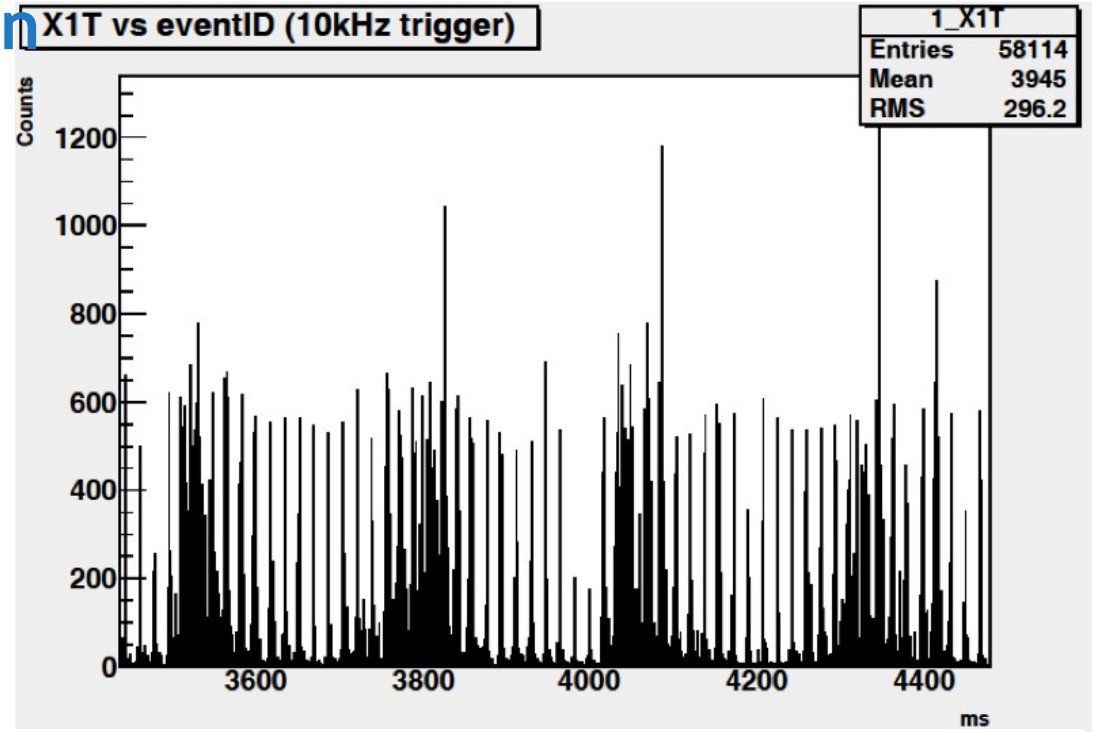
- **vacuum problems since April 2011**
- **status of the external beam line division** (Mike Geelhoed):
  - light at the end of the tunnel:

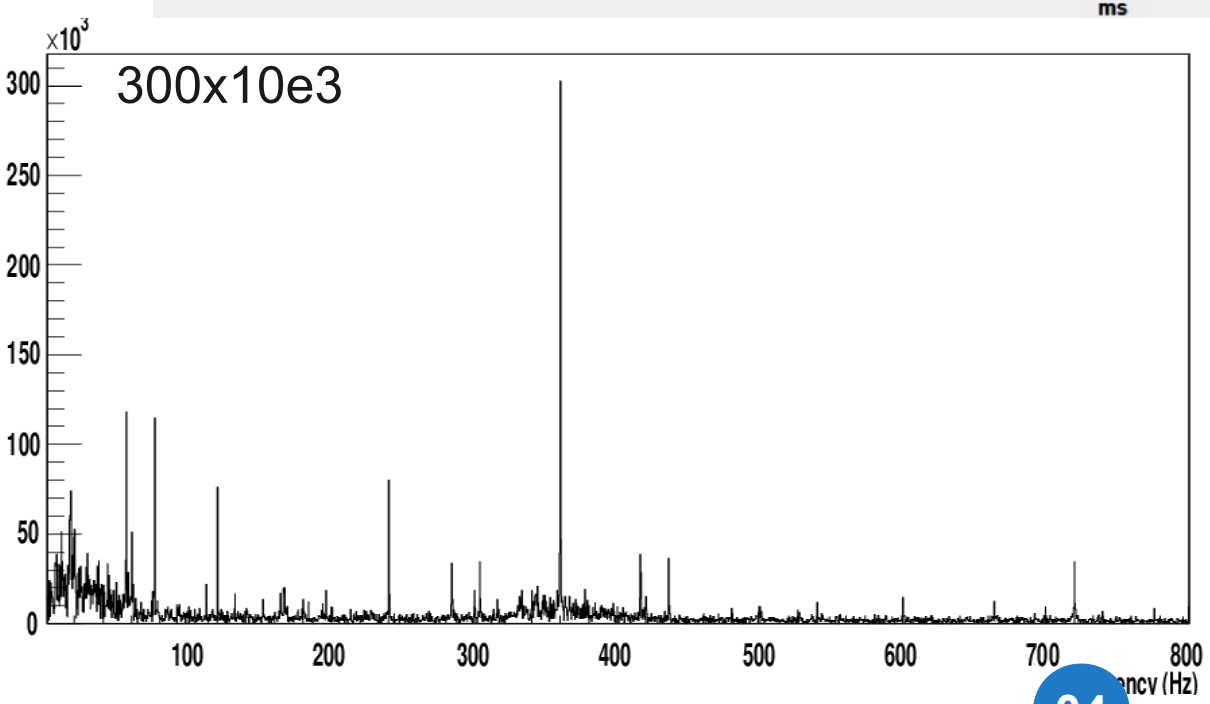
    i.e. new berm pipe is 100% through
  - reinstalling magnets in G2 and NM1
  - berm pipe flanges are being fabricated by the machine shop
- **completed by end of October (tbc)**

Commissioning of MI extraction

- large variation in instantaneous intensity, duty factor very low.
- periodic structure – phase locked to AC 60 Hz
- **AD worked on various improvements,** e.g., quad bus filters, analyze beam structure first at MT
- **improved beam diagnostics via SeaQuest beam-line Cerenkov counter**

  → bucket by bucket intensity
- **plan:** test beam diagnostics at MT3 → analyze beam structure while work on SeaQuest beam line is ongoing
- Cerenkov counter needs to be installed at MT3
- readout boards to be finalized





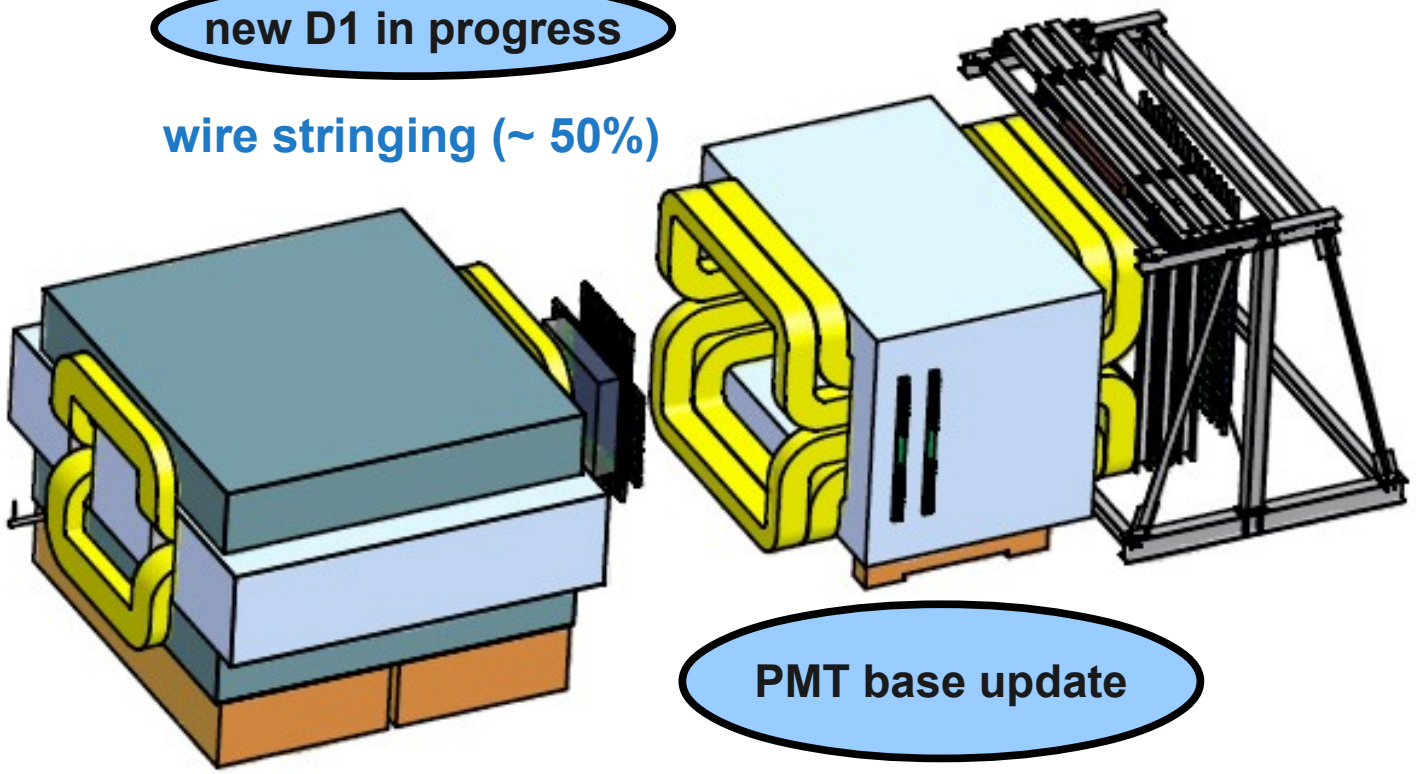
Spectrometer Updates – all other components are ready

interim D1

repair completed
reinstalled

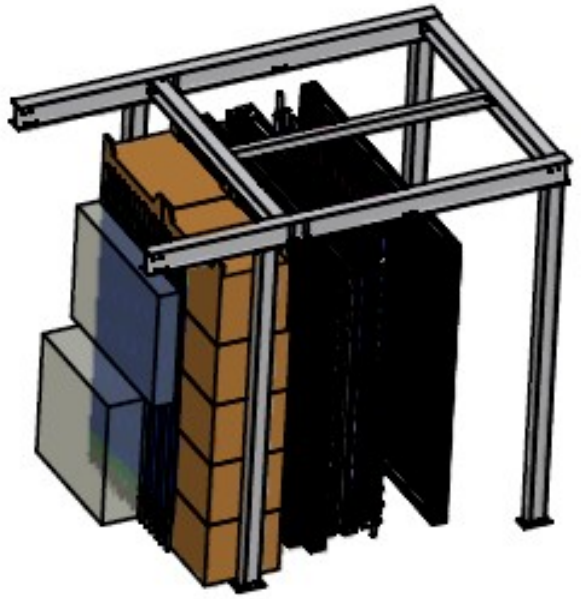
new D1 in progress

wire stringing (~ 50%)



PMT base update

higher-rate capability for H1/H2
installation complete
→ gain-matching in progress



new D3m wire chamber completed

HV training @ -2.6 kV operating voltage with Ar:CO_2 gas

DAQ: Improved TDC for Run II

TDC bin width	~0.44 ns	**calibrated**
minimum width of signal	4 ns	
maximum number of hits in 64 ns	4	
adjustable time window (detector)	4ns – 2048ns	
maximum number of hits per trigger	32 – 1024	
multiple events per IRQ	2 – 32	**tested**
scalar buffer	8 hits / channel	
intrinsic zero suppression (multi-sampling)		**tested**
multiple hits elimination		**tested**

leading edge or leading / trailing edge detection

test with hodoscopes and proportional tubes

Run II TDC working

Trigger Updates

- **updates on trigger hodoscopes completed**
- **trigger road generation:**
  - realistic MC sample significantly improved
  - trigger software suite progressing well
- **pulser test almost completed:**
  - a comprehensive test of the trigger firmware
- **final trigger configuration being installed**

Improved Online Monitoring